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FROHFORM PTO 1390		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER FROH 202	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/031763	
INTERNATIONAL APPLICATION NO. PCT/EP00/06948		INTERNATIONAL FILING DATES 20 July 2000		PRIORITY DATE CLAIMED 20 July 1999	
TITLE OF INVENTION AUDIO SIGNAL SOUND DIFFUSION SYSTEM					
APPLICANT(S) FOR DO/EO/US ADT SERVICES AG					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing 35 U.S.C. 371 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371 (f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c)(2)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US) 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371 (c)(2)). <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). 					
Items 11 to 20 below concern document(s) or information included:					
<ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items or information: PCT/RO/101; PCT/IPEA/401; PCT/IPEA/402; PCT/IPEA/416; 					

U.S. APPLICATION NO. (if known, see 37 CFR 1.47) PCT/JP00/069483	INTERNATIONAL APPLICATION NO. 20 July 2000	ATTORNEY'S DOCKET NUMBER FROH 202
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21. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):

☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO And International Search Report not prepared by the EPO or JPO \$1040.00

☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00

☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00

☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00

☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

Surcharge of \$ _____ for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	13 - 20	0	x 18/9	\$	0
Independent claims	1-3	0	x 84/42	\$	0
MULTIPLE DEPENDENT CLAIM(s) (if applicable)				+	\$
TOTAL OF ABOVE CALCULATIONS =				\$	890.00.
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above Are reduced by 1/2.				\$	
SUBTOTAL =				\$	890.00
Processing fee of \$ _____ for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				+	\$
TOTAL NATIONAL FEE =				\$	890.00
Fee for recording the enclosed assignment (37 CFR 1.21 (h)). Assignment must be accompanied by appropriate cover sheet (37 CFR 3.28, 3.31) (_____ per property).				+	\$ 40.00
TOTAL FEES ENCLOSED =				\$	890.00

	Amount to be Refunded:	\$
	Charged:	\$

a. ☒ A check in the amount of \$ 890.00 (Filing Fee) 40.00 (Assignment Fee) to cover the above fees is enclosed.

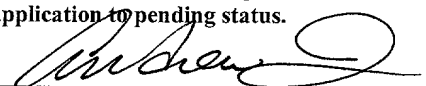
b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required or credit any overpayment to my Deposit Account No. 500624.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO

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SIGNATURE: 
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 NAME
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 REGISTRATION NUMBER

FROH 202 (10200553)

CERTIFICATE OF EXPRESS MAIL	
"Express Mail" mailing label #	EL 829643581 US
Date of Deposit	January 18, 2002
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D C 20231	
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(Name of Depositor)	
<i>Fani Malikouzakis</i>	1/18/02
(Signature of Depositor)	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Giorgio DALL VILLA et al.

Serial Number : To be Assigned

Filing Date : Concurrently Herewith

Based on
International Appl. No. : PCT/EP00/06948

International Filing Date : July 20, 2000

Priority Date Claimed : July 20, 1999

For : AUDIO SIGNAL SOUND DIFFUSION SYSTEM

January 18, 2002

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination please amend the application as follows:

IN THE CLAIMS

Please amend claims 1-12 as follows:

1. (Amended) Audio signal sound diffusion system, comprising:
 - at least one diffuser;
 - at least one amplifier connected to said at least one diffuser;
 - a generation circuit connected to said at least one amplifier for generating at least one audio signal;
 - a control circuit for controlling said sound diffusion system adapted to detect malfunctions of said diffusion system and to generate an appropriate status alarm of said diffusion system in response thereto; and
 - connection means adapted to connect said control circuit to a management system,said control circuit being adapted to send to said management system at least one status alarm of said sound diffusion system, said status alarm signal indicating which of a plurality of malfunctions has occurred.
2. (Amended) The sound diffusion system of claim 2, wherein said audio signal is an alarm signal.
3. (Amended) The sound diffusion system of claim 2, wherein a local control for the manual activation of said at least one alarm signal.
4. (Amended) The sound diffusion system of claim 1, wherein said at least one status alarm indicates a malfunction selected from the list of: lack of mains voltage, failure of said at least one amplifier, failure of said at least one diffuser, and a charge state of reserve batteries for powering said diffusion system in the event of lack of mains voltage.
5. (Amended) The sound diffusion system of claim 1, wherein said control circuit comprises a test circuit adapted to cyclically check the correct operation of said at least one amplifier.
6. (Amended) The sound diffusion system of claim 1, wherein said control circuit comprises a test circuit adapted to cyclically check the correct operation of said at least one diffuser.

7. (Amended) The sound diffusion system of claim 5, wherein said test circuit sends a test signal to the input of said at least one amplifier and measures the relevant signal at the output of said at least one amplifier.
8. (Amended) The sound diffusion system of claim 2, wherein said management system is a computer.
9. (Amended) The sound diffusion system of claim 8, wherein said computer allows the programming of the parameters of said at least one alarm signal.
10. (Amended) The sound diffusion system of claim 1, wherein said management system is remote and is connected to said control circuit through cable.
11. (Amended) The sound diffusion system of claim 1, wherein said management system is remote and connected to said control circuit through telephone line or optical fibre or radio link.
12. (Amended) The sound diffusion system of claim 2, wherein said management system is adapted to send to said sound diffusion system an activation command of said at least one alarm signal.

Please add the following new claim 13.

- 13. (New) The sound system of claim 6, wherein said test circuit sends a test signal to the input of said at least one amplifier and measures the relevant signal at the output of said at least one amplifier.--

REMARKS

Applicants have amended claims 1-12 and added new claim 13.

Applicants request that the foregoing amendments be entered prior to examination.

An early and favorable response is earnestly solicited.

No fee is believed to be due, however, should a fee become due the Commissioner is hereby authorized to deduct any fee associated with this filing from Deposit Account No. 500624.

Respectfully submitted,

FULBRIGHT & JAWORSKI L.L.P.

By



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2025-01-06 10:00:00

MARKED-UP COPY OF AMENDED CLAIMS

The claims are amended as follows:

1. (Amended) Audio signal sound diffusion system, [characterized in that it comprises] comprising:
 - [-] at least one diffuser [(35a-38a, 35b-38b)];
 - [-] at least one amplifier [(31-34)] connected to said at least one diffuser [(35a-38a, 35b-38b)];
 - [-] a generation circuit [(27)], connected to said at least one amplifier [(31-34)], for generating at least one audio signal;
 - [-] a control circuit [(10)] for controlling said sound diffusion system adapted to detect malfunctions of said diffusion system and to generate an appropriate status alarm [(14)] of said diffusion system in response thereto; and
 - [-] connection means [(17, 40)] adapted to connect said control circuit [(10)] to a management system,

said control circuit [(10)] being adapted to send to said management system at least one status alarm [(14)] of said sound diffusion system, said status alarm signal indicating which of a plurality of malfunctions has occurred.
2. (Amended) [Sound] The sound diffusion system [according to] of claim 2, [characterized in that] wherein said audio signal is an alarm signal.
3. (Amended) [Sound] The sound diffusion system [according to] of claim 2, [characterized in that it comprises] further comprising a local control [(16)] for the manual activation of said at least one alarm signal.
4. (Amended) [Sound] The sound diffusion system [according to] of claim 1, [characterized in that] wherein said at least one status alarm indicates a malfunction selected from the list of: lack of mains voltage, failure of said at least one amplifier [(31-34)], failure of said at least one diffuser [(35a-38a, 35b-38b)], and a charge state of reserve batteries [(13)] for powering said diffusion system in the event of lack of mains voltage.

5. (Amended) [Sound] The sound diffusion system [according to] of claim 1, [characterized in that] wherein said control circuit [(10)] comprises a test circuit [(27, 30)] adapted to cyclically check the correct operation of said at least one amplifier [(31-34)].
6. (Amended) [Sound] The sound diffusion system [according to] of claim 1, [characterized in that] wherein said control circuit [(10)] comprises a test circuit [(27, 30)] adapted to cyclically check the correct operation of said at least one diffuser [(35a-38a, 35b-38b)].
7. (Amended) [Sound] The sound diffusion system [according to] of claim[s] 5 [or 6], [characterized in that] wherein said test circuit [(27)] sends a test signal [(25)] to the input of said at least one amplifier [(31-34)] and measures the relevant signal at the output of said at least one amplifier [(31-34)].
8. (Amended) [Sound] The sound diffusion system [according to] of claim 2, [characterized in that] wherein said management system is a computer.
9. (Amended) [Sound] The sound diffusion system [according to] of claim 8, [characterized in that] wherein said computer allows the programming of the parameters of said at least one alarm signal [(14)].
10. (Amended) [Sound] The sound diffusion system [according to] of claim 1, [characterized in that] wherein said management system is remote and is connected to said control circuit [(10)] through cable.
11. (Amended) [Sound] The sound diffusion system [according to] of claim 1, [characterized in that] wherein said management system is remote and [it is] connected to said control circuit [(10)] through telephone line [(41)] or optical fibre [(42)] or radio link [(43)].

12. (Amended) [Sound] The sound diffusion system [according to] of claim 2, [characterized in that] wherein said management system is adapted to send to said sound diffusion system an activation command [(15)] of said at least one alarm signal.

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AUDIO SIGNAL SOUND DIFFUSION SYSTEM

Technical field

The present invention relates to an audio signal sound diffusion system such as the diffusion of alarm signals, pre-recorded signals and microphone signals over wide areas.

Background Art

For the diffusion of alarm signals and vocal announcements over wide areas, a plurality of diffusers connected to one or more amplifiers are normally used.

Such apparatuses, that signal the existence of a danger, have operating periods limited in time alternated by non-operating periods of long length.

In such long inactivity of the apparatuses, which are normally located outside and so exposed to bad weather, they can be subject to failures.

At the moment of their activation, in case of danger, they can be out of order and so they cannot be able to fulfil their task.

Additionally, in case of audio signal sound diffusion systems for wide areas, such as for example the area of an airport or barracks, where different diffusion apparatuses are necessary, whose operating efficiency must be substantially equal to 100%, the activation and control problems of such apparatuses become relevant.

An object of the present invention is to provide an audio signal sound diffusion system able to overcome the inconveniences mentioned above.

Disclosure of the Invention

According to the present invention, such object is achieved through an audio signal sound diffusion system characterised in that it comprises: at least one diffuser; at least one amplifier connected to said diffuser; a generation circuit of at least one audio signal connected to said amplifier; a control circuit of said sound diffusion system adapted to detect malfunctions of said diffusion system and to generate a status alarm of said diffusion system; connection means adapted to connect said control circuit to a management system; said control system is adapted to send to said management system at least a status alarm of said sound diffusion system.

Thanks to the present invention it is possible to realise a diffusion system able to keep under control, by a management system, the operation of the different elements that form the diffusion system so that a high efficiency is guaranteed.

Brief Description of the Drawings

The characteristics and the advantages of the present invention will be evident from the following detailed description of one of its embodiments, described as a non-limiting example in the drawings enclosed, wherein:

Figure 1 shows schematically a diffusion point of the diffusion system according to the present invention;

Figure 2 shows a block diagram of the control circuit of a diffusion point of the diffusion system according to the present invention;

Figure 3 shows a block diagram of the amplifiers and the diffusers of a diffusion point of the diffusion system according to the present invention;

Figure 4 shows a block diagram of an interface circuit that allows the connection between a diffusion point to a remote management system according to the present invention.

Detailed Description of the Invention

In Figure 1 number 1 indicates a diffusion point of a diffusion system according to the present invention, that comprises a plurality of diffusers 2 (for example 45W LBC3493/10 horns manufactured by Philips) preferably formed by four groups of seven horns. Such diffusers 2 are located on a pole 3 having an effective length equal to for example 12 meters (for example a Fe510 pole having a base diameter of 355 mm provided by Siderpali), inserted into ground 5. Beside pole 3 a cabinet 4 is located, that contains the control circuit necessary for the operation of diffusion point 1.

In Figure 2 a control circuit 10 is shown, that is powered by mains 11 or, as an alternative, when the mains 11 does not work, by an emergency power supply made of batteries 13 and a relevant battery charger 12 made of two elements 12a and 12b connected in parallel.

Locally, control circuit 10 has a microphone 21 for the diffusion of local vocal announcements, a loudspeaker 20 used as monitor, a series of inputs called local controls 16 that come from a series of switches (put on an external panel not shown in the figure) that allow to activate manually the alarm signal or signals pre-recorded in the control circuit 10, a reset switch to stop the alarm diffusion and a (priority) switch to activate the local controls or remote controls.

Additionally, control circuit 10 comprises an audio input 19 and an audio output 18, a series of remote control inputs 15 having the same functions as local controls 16 and having further an input for the introduction of a remote audio signal.

There is a series of local alarm outputs (or status alarms of diffusion point 1) 14 including the following signalling: local control in progress, priority switch on local, lack of mains, battery low - first level, battery low -second level and amplifier/horns alarm.

Remote control inputs 15 and local alarm outputs 14 are made available to the terminal boxes (not shown in the figures) of the diffusion point 1, for the cable connection (in particular one connection wire for each signal of remote controls 15 and each signal of the local alarms 14) of control circuit 10 to a remote management system. The remote management system is made, in this case, preferably of a computer, but control switches (for remote controls 15) and signal lamps (for local alarms 14) can also be used.

There are also a series of vocal and alarm outputs 24 that are connected at the amplifiers input, a series of on/off outputs 26 for the switching on and off of the amplifiers, an output of the test signal 25 to be applied at the amplifiers input, an output of a control signal 23 of a test relay able to switch the measurement input 22 between each of the amplifiers outputs.

An RS232 connection 17 is also included, locally as well, for the connection to a local management system, in particular a computer for the programming of the parameters relevant to the type or types of alarms to be pre-recorded, for example frequency, duration, rising time, falling time and signal level; and, additionally, to program the initial settings that will be necessary during the operation of the diffusion system to diagnose amplifiers and horns malfunctions.

Control circuit 10 is made of several circuits or boards as it will be described later on.

The system core is Alarm Generator and CPU board 27. Such board 27, through a bus, controls all the other boards and manages the audio signals route towards the final amplifiers. Board 27 receives the controls for the generation of alarms through local or remote inputs and controls, through digital outputs, the lamps of the buttons of the frontal panel, the switching of the inputs of the audio signal and alarm signal of the amplifiers. The alarm generation is realised by board 27. The alarm signal generated in that way is provided on two separate

outputs so that it is possible to independently regulate the local signal towards the amplifiers "call" inputs and the remote signal towards the remote audio output. Board 27 also provides a 20 kHz test signal towards the amplifiers for the control function of the amplifier and horn status.

5 A preamplifier board 28 receives the remote audio signal and the local microphone signal, provides for their regulation and so for the sending of the signal selected at the "music" inputs of the final amplifiers. This board provides also for the amplification of the signal towards the local monitor loudspeaker.

10 An alarm board 29 receives from the power supply rack, through the battery status control circuits, the status signals relevant to the mains 11 and the charge level of batteries 13: "partially discharged" or "discharged", and it makes it available with the local alarms. Through these signals the board is able to manage the power amplifiers and, in case mains is lacking, realise a load reduction through On/Off commands towards the amplifiers. In case mains 11 voltage is
15 lacking, control circuit 10 provides four On/Off commands 26 connected to amplifiers 31-34; on a first level of battery discharge two amplifiers are switched off, on a second discharge level the last two amplifiers are switched off, obtaining in this way the load reduction and the growth of the service autonomy even if at reduced conditions.

20 In case the level of batteries 13 is exceedingly low because of a discharge due to a long interruption of mains or failure of the batteries themselves, all the amplifiers 31-34 will be deactivated in order to avoid their total discharge but the control circuit is anyway kept powered to be able to send to the management system the diffusion point alarm status.

25 The measurement board 30 receives from CPU board 27 an amplifier polling command and provides to select the contact of the relay associated to the output of the amplifier under measurement; the switch contacts of the relay provide to send

back towards the measurement board the signal at 20 kHz present at the output. Through the measure of this signal, the board is able to verify the status of the amplifier (out of order or working) and of the load represented by the horns (load connected or open) and communicate it to the alarm board.

5 In Figure 3 a block diagram of the amplifiers 31-34 and the diffusers 35a-38a and 35b-38b of a diffusion point of the diffusion system according to the present invention is shown, wherein the signals coming from the block diagram of Figure 2 are evident. In particular, measurement signal 22, control signal 23 of the test relay 39, test signal 25a-25d and vocal and alarm signals 24a-24d are evident.
10 Relay 39 cyclically connects via control signal 23 measurement signal terminal 22 to each output of the amplifiers 31-34. In Figure 3 only one relay 39 is schematically represented, but it is possible to use one relay for each output of amplifiers 31-34, controlled by suitable signals 23.

15 In Figure 4 a block diagram of an interface circuit 40 is shown, that allows the connection of the control circuit 10 of a diffusion point to a remote management system. It has a series of connection signals with the analogous ones of Figure 2 such as remote controls 15, local alarms 14 and RS232 connection 17. Additionally, it has, as a connection with the outside world, in alternative or in combination for more security, a connection 41 with a two-wire telephone cable,
20 an optical fibre connection 42 and a link to a radio transceiver 43. Interface 40 allows the communication of the diffusion point with a remote management system that receives local alarms 14 in such a way that it knows the operating state of the diffusion system and, besides, can send, through remote controls 15, the activation signals of diffusion point 1.

25 The remote management system, made in this case, preferably of a computer, is connected, on request, through the selected connection method (telephone cable plus modem, optical fibre or radio link) to each diffusion point located in the control area and controls its status. The remote management system

operator, according to the control results, can therefore arrange eventual repairs; additionally, he can remotely activate the alarm signals or send a vocal signal or modify the characteristic parameters of the alarm signals.

5 In the example described, reference is made to the sound diffusion of alarm signals for an airport or barracks area; therefore, in this case, the alarm signals are more than one and in particular they are:

- general alarm: for example continuous sound that lasts 3 minutes,
- air alarm: for example modulated sound that lasts 1 minute,
- N.B.C. alarm: for example sound that lasts 12 sec., followed by a silence interval of 12 sec., the whole lasting 3 minutes.

10 These alarm signals can be locally activated through dedicated buttons located on the rack frontal panel or remotely.

Through a priority switch located on the rack frontal panel it is possible to give priority to the local controls or the remote controls.

15 All the parameters that make the alarm signal (frequency, duration, interval and levels) can be adjusted via software during the setting up through RS232 connection 17.

20 Measurement board 30 cyclically, for example every 30 minutes, controls (polls) the correct operation of amplifiers 31-34 and of the load formed by horns 35a-38a and 35b-38b; test signal 25a-25d at 20kHz is fed to one of the inputs of amplifiers 31-34 and it is cyclically read (through measurement signal 22) on the corresponding output connected to its horns group through relay control signal 23.

In this way the system is always able to recognise the status of the diffusion point, the possible damage of an amplifier or the interruption of the horns.

The type of amplifier used in the example is LBB1348/40 manufactured by PHILIPS with an output power of 400 W and a voltage of 100 V.

The amplifiers has two balanced audio inputs: a "call" input used for alarm tones with fixed signal level and a "music" input with adjustable level used for the audio signal. The switch between these two inputs is controlled by control circuit 10 through a suitable signal not shown in the figure.

The programming of the parameters relevant to the alarm types to be recorded, during the setting up of the system and in any other update situation, is made according to the following steps.

Load on the computer the application package, connect the computer serial port to RS232 connection 17 and run the application.

Verify on the status bar that the signal SERIAL CONNECTION be green, that the polling signalling be intermittent (operating connection) and that there are no red alarm signals (local alarms 14).

GENERAL ALARM SETTING

Click with the mouse on RESET button to visualise the current recorded values. If it is necessary, modify with the mouse the cursor position on the frequency scale; move the mouse on the data field DURATION and input the new value of continuous sound interval in seconds. Record the new values by clicking with the mouse on RECORD button.

N.B.C. ALARM SETTING

Click with the mouse on RESET button to visualise the current recorded values. If it is necessary modify with the mouse the cursor position on the frequency scale; move the mouse on the data fields DURATION, SOUND and PAUSE and input the new values, respectively in seconds for the whole alarm

interval, sound interval and silence interval. Record the new values by clicking with the mouse on RECORD button.

AERIAL ALARM SETTING

Click with the mouse on RESET button to visualise the current recorded values. If it is necessary modify with the mouse the cursors position on the modulated sound start and end frequency scale; move the mouse on the data fields DURATION, RISE and FALL and input respectively the new values in seconds for the whole alarm duration, modulated sound rising time and falling time. Record the new values by clicking with the mouse on RECORD button.

GENERATOR LEVEL SETTING

Click with the mouse on RESET button to visualise the current recorded values. If it is necessary modify with the mouse the cursors position on the levels scale. For LOCAL level, push the GENERAL ALARM button on the frontal panel to have a continuous sound and adjust with the mouse the cursor position to have on the amplifiers voltmeter the indication of +3dB. For the REMORE level, activate remotely the control for GENERAL ALARM to have a continuous sound and adjust with the mouse the cursor position to have on the amplifiers voltmeter the indication of +3dB. Record the new values by clicking with the mouse on RECORD button.

The programming of the initial settings that will be useful during the diffusion system operation to diagnose the malfunctioning of the amplifiers or the horns is made according to the following steps.

Load on the computer the application package, connect the computer serial port to RS232 connection 17 and run the application. Click on Diagnose menu on Menu bar.

Verify on the status bar that the signal SERIAL CONNECTION be green, that the polling signals be intermittent (operating connection) and that there are no red alarm signals.

ADJUSTMENT LEVEL 3 - DIFFUSERS NOT CONNECTED

5 Open each amplifier load, by disconnecting the relevant cable on the rack terminal box. Click with the mouse on button TEST AMPL 1 and verify that the level be 2.5 V. If the level is different, adjust with the mouse the cursor on the level scale to have a reading equal to 2.5V. Click with the mouse on button INSERT LEVEL 3, the value beside the button will assume value 2.5V. Click with
10 the mouse on button RECORD to record the value. Repeat the sequence for all the other amplifiers. At the end of the amplifier tests click with the mouse on button TEST END.

ADJUSTMENT LEVEL 1 - DIFFUSERS CONNECTED

15 Connect each amplifier load, by fixing the relevant cable on the rack terminal box. Click with the mouse on button TEST AMPL 1. Click with the mouse on button INSERT LEVEL 1, the value beside the button will assume the read value. Click with the mouse on button RECORD to record the value. Repeat the sequence for all the other amplifiers. At the end of the amplifier tests click with the mouse on button TEST END.

20 ADJUSTMENT LEVEL 2 - PARTIALLY CONNECTED DIFFUSERS

LEVEL 2 is a fixed reference value of intermediate between the two extreme values for the detection of partially connected diffusers. This value cannot be adjusted.

ADJUSTMENT OF THE INTERVAL TIME FOR THE AUTOMATIC TEST
(for the control of horns and amplifiers)

Input in the data field AUTOMATIC MEASURE FIELD the value in minutes of the pause time between an automatic test and the following one (nominally 30 minutes). Click with the mouse on RECORD button, in the automatic test field, to record the value. Click on AUTOMATIC TEST button to start the operation; on the data field the test signal measured values at 20 kHz of the four amplifiers appear. Exit from diagnose menu and go back to the initial window by clicking with the mouse on CLOSE button. To exit the program, select with the mouse EXIT menu.

CLAIMS

1. Audio signal sound diffusion system, characterised in that it comprises:
 - at least one diffuser (35a-38a, 35b-38b);
 - at least one amplifier (31-34) connected to said diffuser (35a-38a, 35b-38b);
 - 5 - a generation circuit (27) for generating at least one audio signal connected to said amplifier (31-34);
 - a control circuit (10) for controlling said sound diffusion system adapted to detect the malfunctions of said diffusion system and to generate a status alarm (14) of said diffusion system;
 - 10 - connection means (17, 40) adapted to connect said control circuit (10) to a management system;said control circuit (10) being adapted to send to said management system at least one status alarm (14) of said sound diffusion system.
2. Sound diffusion system according to claim 1, characterised in that said audio signal is an alarm signal.
3. Sound diffusion system according to claim 2, characterised in that it comprises a local control (16) for the manual activation of said at least one alarm signal.
4. Sound diffusion system according to claim 1, characterised in that said at least one status alarm (14) comprises signalling the lack of mains voltage (11).
5. Sound diffusion system according to claim 1, characterised in that said at least one status alarm (14) comprises signalling the failure of said at least one amplifier (31-34).
6. Sound diffusion system according to claim 1, characterised in that said at least one status alarm (14) comprises signalling the failure of said at least one diffuser (35a-38a, 35b-38b).

7. Sound diffusion system according to claim 1, characterised in that said diffusion system is powered by reserve batteries (13) in the lack of mains voltage (11).
8. Sound diffusion system according to claim 7, characterised in that said at
5 least one status alarm (14) comprises signalling the charge state of said reserve batteries (13).
9. Sound diffusion system according to claim 1, characterised in that said control circuit (10) comprises a test circuit (27, 30) adapted to cyclically check the correct operation of said at least one amplifier (31-34).
- 40 10. Sound diffusion system according to claim 1, characterised in that said control circuit (10) comprises a test circuit (27, 30) adapted to cyclically check the correct operation of said at least one diffuser (35a-38a, 35b-38b).
- 45 11. Sound diffusion system according to claims 9 or 10, characterised in that said test circuit (27) sends a test signal (25) to the input of said at least one amplifier (31-34) and measures the relevant signal at the output of said at least one amplifier (31-34).
12. Sound diffusion system according to claim 2, characterised in that said management system is a computer.
13. Sound diffusion system according to claim 12, characterised in that said
20 computer allows the programming of the parameters of said at least one alarm signal (14).
14. Sound diffusion system according to claim 1, characterised in that said management system is remote and is connected to said control circuit (10) through cable.

15. Sound diffusion system according to claim 1, characterised in that said management system is remote and it is connected to said control circuit (10) through telephone line (41) or optical fibre (42) or radio link (43).
16. Sound diffusion system according to claim 2, characterised in that said management system is adapted to send to said sound diffusion system an activation command (15) of said at least one alarm signal.

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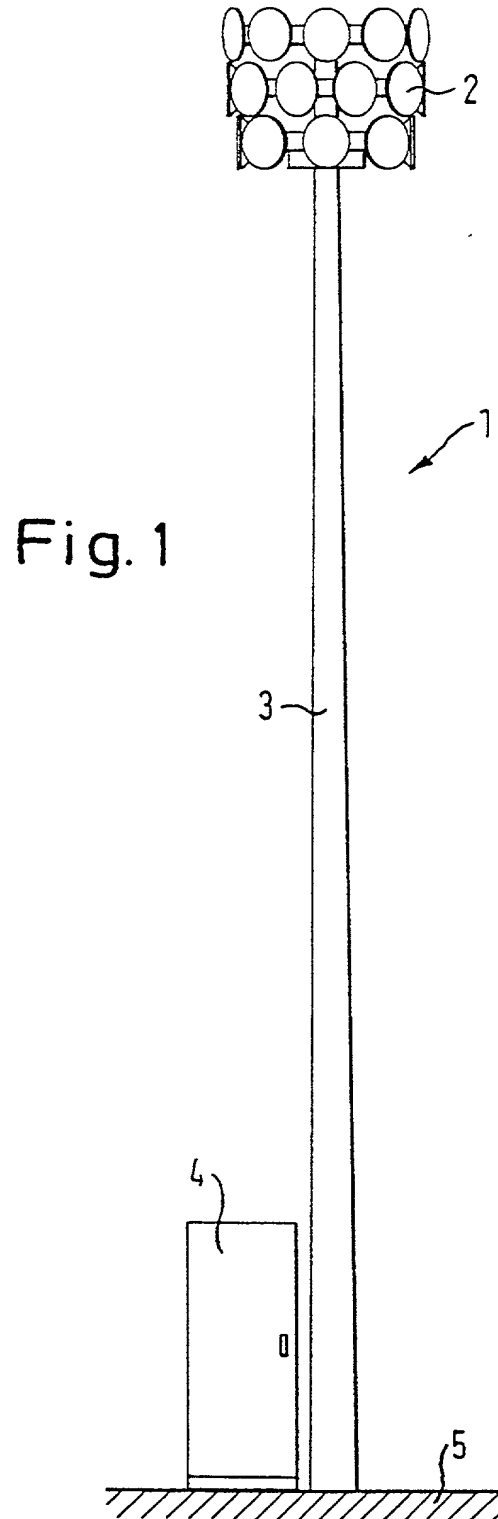
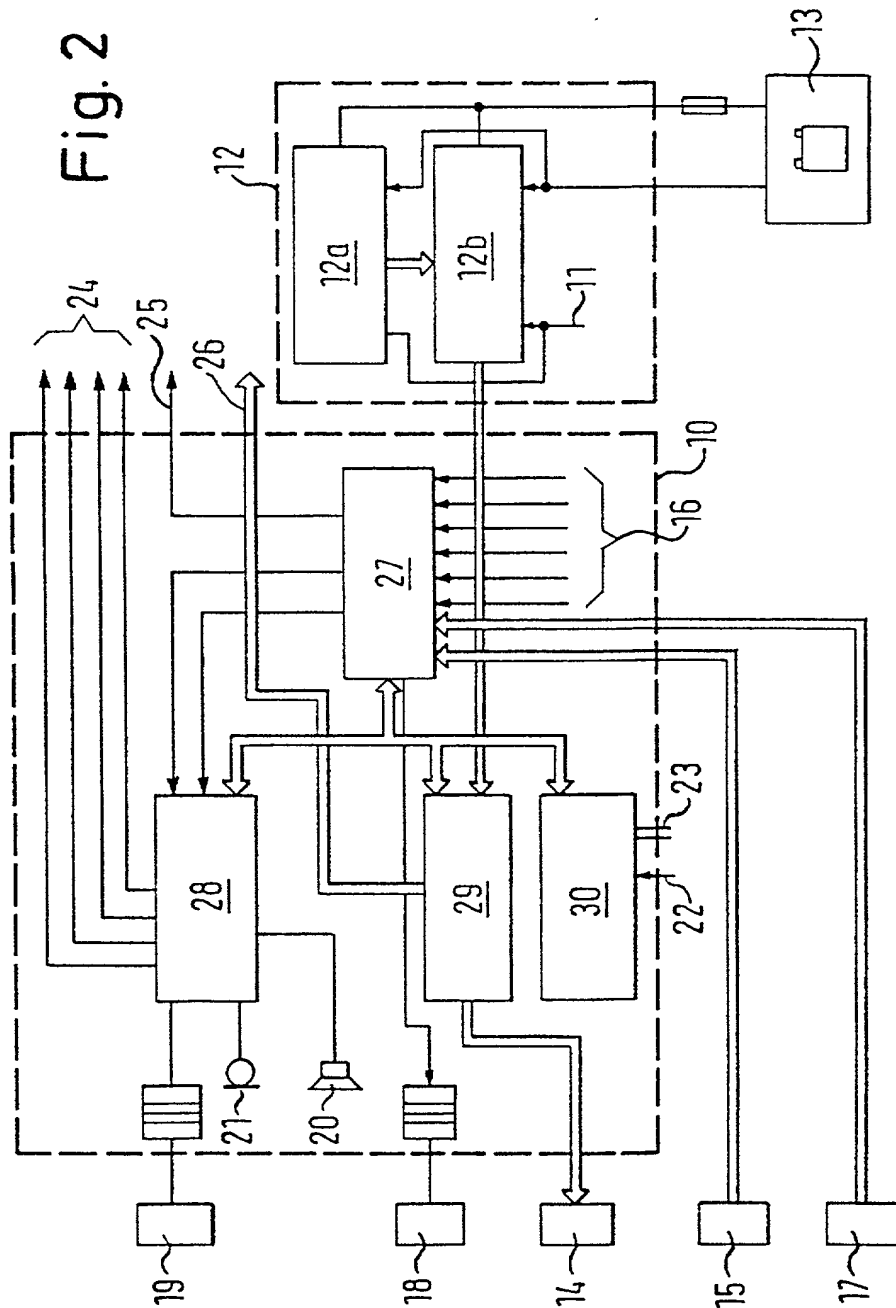
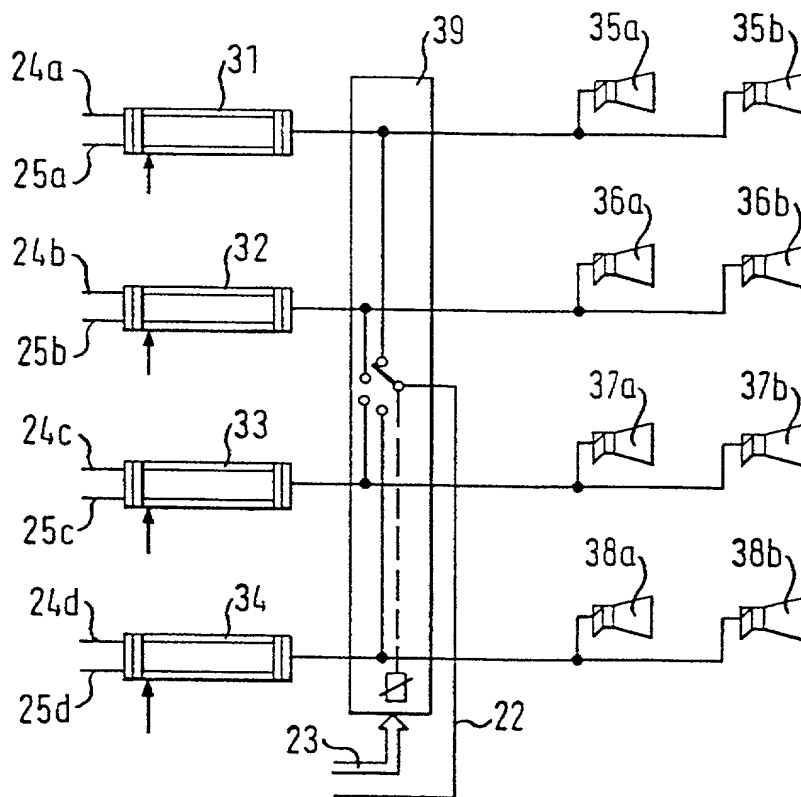


Fig. 2



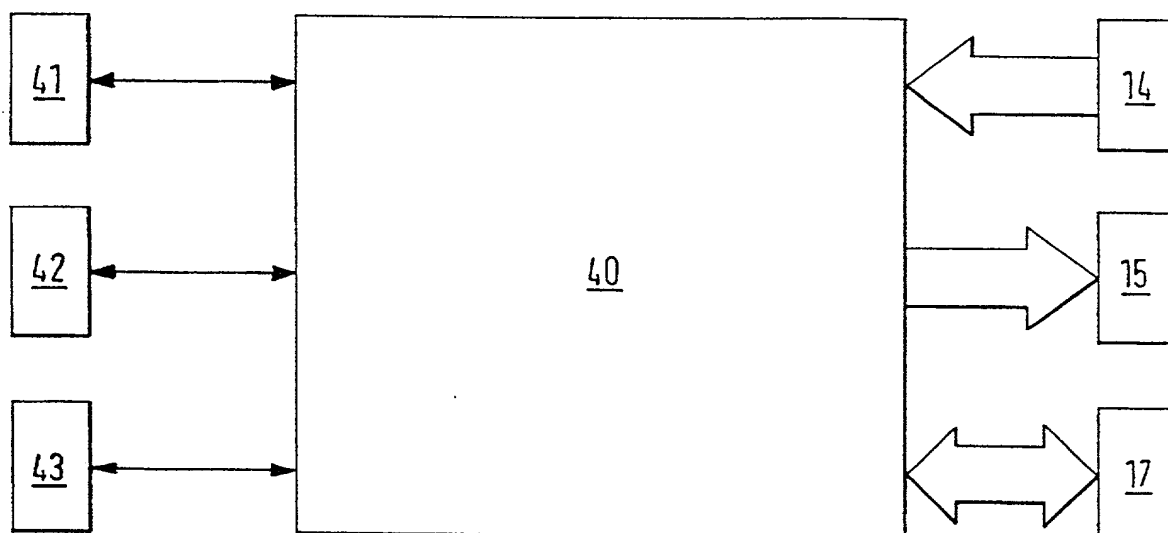
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Fig. 3



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Fig. 4



DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My resident, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

AUDIO SIGNAL SOUND DIFFUSION SYSTEM, the specification of which

(x) is attached hereto.

() was filed on _____ as Application Serial No. _____.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, 1.56(a).

Foreign Priority Applications

I hereby claim foreign priority benefits under Title 35, United States Code 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Priority Claimed

WO 01/06475	Europe	July 20, 2000	Yes (X) No ()
(Number)	(Country)	(Day/Month/Year Filed)	
MI99A001597	Italy	July 20, 1999	Yes (X) No ()
(Number)	(Country)	(Day/Month/Year Filed)	

U.S. Priority Applications

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Applic. Serial No.)	(Filing Date)	(Status-patented/pending/abandoned)
(Applic. Serial No.)	(Filing Date)	(Status-patented/pending/abandoned)

Power of Attorney

I hereby appoint the following attorneys to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Peter F. Felfe, Reg. No. 20,297; John B. Lynch, Reg. No. 20,940; Norman D. Hanson, Reg. No. 30,946; John A. Bauer, Reg. No. 32,554; James Zubok, Reg. No. 38,671; Mary Anne Schofield, Reg. No. 36,669; James R. Crawford, Reg. No. 39,155, C. Andrew Im, Reg. No. 40,657 and David Rubin, Reg. No. 40,314, my attorneys with full power of substitution and revocation. Address all telephone calls to C. ANDREW IM, Esq., at (212) 318-3000 Address all correspondence to:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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